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to unfaced structural cementitious panels (using glass reinforcement). This is a comparison of the very high strength, high density core composition compared to a lower density core, with the lower density core that has a compressive strength in the range of 2000-3000 psi, and a density in the range of 70-80 pcf. FIG. 19 represents the impact of the high density, high strength core (with glass reinforcement) compared to a standard strength core (with glass reinforcement) on velocity attenuation.

While particular embodiments of the present invention have been shown and described, it will be appreciated by those skilled in the art that changes and modifications may be made thereto without departing from the invention in its broader aspects and as set forth in the following claims.

We claim:

1. A fiber reinforced, cementitious armor panel comprising:

a cementitious core comprising reinforcing fiber uniformly distributed within a continuous phase,  
the continuous phase resulting from the curing of an aqueous mixture of

25-45 weight % inorganic cement binder,

an absence of silica flour,

35-65 weight % silica sand filler having a median particle size of about 150-450 microns,

5-15 weight % pozzolanic filler having a median particle size of less than or equal to 50 microns,

0.25-5.0 weight % polycarboxylate based self-leveling agent, and

6-12 weight % water, and

a skin layer attached to at least one surface of the cured continuous phase.

2. The panel of claim 1, wherein the cementitious core comprises the reinforcing fiber in an amount of about 0.5-6.0% by volume of the cementitious core before the continuous phase is cured.

3. The panel of claim 1, wherein the cementitious panel has a compressive strength of at least about 10,000 psi when cured.

4. The panel of claim 1, wherein the cementitious panel has a compressive strength of at least about 15,000 psi when cured.

5. The panel of claim 1, wherein the aqueous mixture comprises an alkanolamine in an amount of about 0.005 wt. % to about 0.500 wt. % by weight of the cement binder, and an acid or acid salt in an amount of about 0.10 wt. % to about 1.80 wt. % by weight of the combined weight of the cement binder and pozzolanic filler.

6. The panel of claim 5, wherein the aqueous mixture comprises triethanolamine and tartaric acid.

7. The panel of claim 1, wherein the skin layer is a fiber-glass reinforced plastic.

8. The panel of claim 1, wherein the skin layer is a fiber-glass reinforced polyester.

9. The panel of claim 1, wherein the inorganic cement binder is Portland cement.

10. The panel of claim 1, wherein the compressive strength after 1 day curing is less than about 2000 to 4000 psi and the compressive strength develops to more than about 20,000 psi after curing for 28 days.

11. The panel of claim 2, wherein the reinforcing fibers are selected from the group consisting of glass fibers, metal fibers, polymer fibers and mixtures thereof.

12. The panel of claim 2, wherein the reinforcing fiber is glass fibers.

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13. The panel of claim 1, wherein the weight ratio of pozzolanic filler to inorganic cement binder is about 0.05 to 0.30:1.0.

14. The panel of claim 1, wherein the weight ratio of silica sand filler to the combined weight of inorganic cement binder and pozzolanic filler is about 0.75:1.0 to about 1.50:1.0.

15. The panel of claim 1, wherein the weight ratio of water to the combined weight of the inorganic cement binder and pozzolanic filler dry reactive powders is less than or equal to about 0.35:1.0.

16. The panel of claim 1, wherein the weight ratio of pozzolanic filler to inorganic cement binder is about 0.15 to about 0.20:1.0; the weight ratio of silica sand filler to the combined weight of inorganic cement binder and pozzolanic filler is about 0.90 to 1.10:1.0; and the weight ratio of water to the combined weight of the inorganic cement binder and pozzolanic filler dry reactive powders in the continuous phase is less than or equal to about 0.20:1.0.

17. The panel of claim 1, wherein the median particle size of the silica sand filler is about 250 to about 350 microns.

18. The panel of claim 1, wherein the median particle size of the pozzolanic filler is less than about 0.1 to 1.0 microns.

19. The panel of claim 1, wherein the polycarboxylate based self-leveling agent is polycarboxylate polyether.

20. The panel of claim 1, wherein the pozzolanic filler is silica fume.

21. The panel of claim 1, wherein the continuous phase comprises 0.75-2.5 weight % polycarboxylate polyether self-leveling agent.

22. The panel of claim 1, wherein the polycarboxylate polyether is present in an amount of about 0.75-1.0 weight %.

23. The panel of claim 2, wherein the fiber in the continuous phase of the cementitious core is present in about 3.0 to 3.5% by volume of the continuous phase.

24. The panel of claim 1, wherein the alkanolamine is triethanolamine present in an amount of about 0.025 to about 0.075% by weight and the acid is tartaric acid and is present in an amount of about 0.40% to about 0.60% by weight based upon the weight of the cement components.

25. The panel of claim 1, wherein the polycarboxylate agent is an ether and is present in an amount of about 0.75%-1.50% by wt. of the cementitious mixture on a dry basis.

26. The panel of claim 1, wherein the polycarboxylate agent is present in an amount of about 1.00% - 1.25% by weight of the cementitious mixture on a dry basis.

27. The panel of claim 1, wherein the panel has been sanded and cut to size before said skin layer is attached to the surface of the panel.

28. The panel of claim 1, wherein the skin layer is a fiber reinforced polymer and adhesively laminated to the surface of the cementitious core.

29. The panel of claim 1, wherein the skin layer is a glass fiber reinforced polymer.

30. The panel of claim 29, wherein the glass fiber reinforced polymer is a woven fiber glass reinforced polyester.

31. The panel of claim 1, wherein the reinforcing skin layer is mechanically fastened to the cementitious core.

32. The panel of claim 1, wherein the skin layer is laminated to the surface of the cementitious core with an epoxy adhesive.

33. The panel of claim 1, wherein at least one said skin layer is between opposed surfaces of two adjacent core layers.